

## The Status of Poultry Marketing at Rural, Peri-Urban and Urban Settings of Assosa District in Benishangul Gumuz Region, Western Ethiopia

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**Abstract:** The current study was carried out during May 2013 up to June 2014 at urban, peri-urban and rural settings of Assosa district in Benishangul Gumuz Region, western Ethiopia. The aim of this study was to investigate and compare the status of poultry marketing at different locations of the study area. By using structured and semi-structured questionnaire, a cross-sectional systematic random survey of 90 respondents (30 from the markets of each study settings) was conducted and necessary information was gathered on poultry marketing conditions of different locations. The study employed multiple methods of data analysis including descriptive statistics, ANOVA and Qualitative analysis. The majority of respondents in the three surveyed locations reported that the current price for poultry had increased by 4 fold compared to the price in the past ten years. The reasons for selling poultry were the need to cover cash expenses to fill household food shortage, credit repayment, changing for other animal, clothing and covering school fee. As compared to other market events, peak supply of poultry was recorded during Christmas, while the lowest quantity offered was observed during Christmas fasting period of Orthodox Christians in the three monitored market places of the three locations. Noticeably significantly higher average selling price for cockerel (160.2 Birr), was observed during the onset of Christmas festivity than normal/non-festivity and fasting period of orthodox Christian (140.5 birr). The marketing condition was challenged by different constraining factors in urban, peri-urban and rural locations. Difference in socio-economic status, growth and density of population among urban, rural and peri-urban residents, resulted in variation on poultry marketing in the three settings. There was seasonal fluctuation of poultry price at all markets of the study areas. Therefore site based development interventions could help to improve marketing condition of poultry and there by enhance the livelihood of small holders.

**Key words:** Assosa • Marketing • Peri-Urban • Poultry • Rural • Urban

### INTRODUCTION

Population growth, urbanization and rising income in many parts of the developing world is believed to result in a growing demand for food of animal origin. Poultry products are also expected to play pivotal role on this line [1].

The sale of birds and eggs take place in the villages market. Prices fluctuate during the year being low during the hungry season when the granaries are empty and the crops are still growing and everybody needs ready cash. At such time traders come to buy and to resell in big cities. Sometimes middle men are involved. Poultry products which are sold contribute about 15 percent to the annual financial income of the household [2].

Tadelle [3] indicated that farmers sold live birds and eggs, particularly during holidays and festivals and live birds were also sold at the onset of local disease outbreak to prevent expected financial loss. In such circumstances prices fall dramatically due to the high supply of bird's relative to demand. Tadelle *et al.*, studied conducts in five agro ecological zones of Ethiopia [4] live birds and eggs were usually sold in local market, to civil servants and occasionally to middle men for retail in the larger towns and cities of the market shed.

Although difference in socio-economic status, growth and density of population, among urban, rural and peri-urban residents may cause variation in poultry marketing conditions. Relatively no or little

research has been carried out to characterize, understand and improve the situation of marketing based on location [5].

For any development intervention to be undertaken and become successful site based accurate evaluation of poultry marketing condition is essential. However, little has been done to evaluate and determine poultry marketing condition particularly at rural, peri-urban and urban areas of Assosa district in Benishangul Gumuz Region. Therefore, this research work was initiated to investigate the existing situations of poultry marketing in relation to urban, peri-urban and rural settings so that, it would be used as an input for further location based development interventions and researches.

## **MATERIALS AND METHODS**

**Study Area:** The study was carried out at three settings (amba-16 that represent rural, amba-14 that represent peri urban and Assosa town that represent urban) in Assosa district of Benishangul Gumuz Region, Western Ethiopia, located 660 km away from Addis Ababa. Based on difference in (Socio-economic status, demand for poultry meat, poultry meat consumption habit, growth and density of) population and availability of (social services, facility and infrastructure) the three settings were classified as urban, rural and peri-urban. According to this classification urban areas were characterized by having population with (better economic status, higher density, good demand to poultry meat). Urban areas also have a good access to social services, facility and infrastructure. To the contrary rural areas are characterized by having population with (relatively low economic status, lower density and lower demand to poultry meat) rural areas also have a lower access to social services, facility and infrastructures. Peri-urban locations are intermediate areas in terms of socio- economic status and accessibility to facilities. This location difference was expected to have a variation on production and marketing of poultry as a result the study was conducted in relation to setting difference. Assosa district is located between geographical coordinates of 9° 30'N to 11° 39'N latitude and 34° 20'E to 36° 30'E longitude [6]. It is 2330 km<sup>2</sup> wide and range in altitude from 1300-1570 masl [7]. According to CSA [8], the human population size of the BGRS is 670847 with 6.7 persons per km<sup>2</sup> and the majority (more than 91%) of the population living in rural areas [9]. Assosa zone comprises 39.9% of the regional population and 37.4 and 40.3% of the regional urban and rural

population respectively. Assosa comprised of 28.0% of the zonal rural population [7]. The rainfall pattern of the district is mono-modal occurring for 6 or 7 months of the year usually between March/April and August/September. Mean annual rainfall is about 800-1200 mm [7]. Mean annual temperature in Assosa ranges between 25-30°C and 21-35°C. According to Assosa Meteorological Station [9] the hottest period in this district extends from January to May, the peak being March, whereas, the coolest periods occur from June to November, the lowest being August.

**Data Collection and Management:** Both primary and secondary data were collected on various aspects of poultry marketing conditions primary data were collected from 90 sample respondents through semi structured, pretested and restructured questionnaire. Focus group discussion and personnel observation were also carried out to strengthen the information collected from questioner based market survey. The questioner covers various aspects of poultry marketing at different settings. Parameters such as supply of poultry and egg, demand of poultry and egg, selling price of poultry and egg, seasonal fluctuation of price, price trend and market chain were considered.

**Sampling Procedures:** A three stage sampling procedure was used in the market survey. In the first stage, the main markets of the three study locations were chosen purposively based on the availability of poultry and representativeness in terms of the rural market, peri-urban market and urban market areas of Assosa district. In the second stage, since, the study was intended to describe the poultry marketing situations, the three markets were visited and poultry sellers and purchasers found on the market were identified. In the third stage systematic random sampling was used and 90 respondents were chosen from all poultry sellers and purchasers found on the market. To complement the information collected by using market survey, three focus group discussions (one group discussion from each settings) comprising eight participants. Care full personal observation was also followed by household survey and focus group discussion.

**Data Analysis:** Data collected were analyzed using SPSS statistical package [11]. Descriptive statistics, one way ANOVA and narrative analyses were also used in data analysis. Descriptive statistics was used to summarize information.

## RESULTS AND DISCUSSIONS

### Poultry Marketing in Rural, Urban and Peri-urban Settings of Assosa District

**Trends in the Prices of Poultry:** According to respondents' in all study areas, livestock price in general and poultry price in particular has been increasing in recent years. This might be associated with the escalation in the living standard. Similarly, Aklilu [11] has indicated growing in the price of poultry in recent years. The majority of respondents in the three surveyed locations reported that the current price for poultry had increased by 4 fold compared to the price in the past ten years (Table 1). During group discussion in the market, producers also expressed that the current price had increased by 4 fold compared to before ten years. Increase in urban consumers (such as increase in government employee and urban dwellers) is reported as the main reason for the rise in price of poultry.

According to respondents, particularly in rural and peri-urban locations, the increase in the number of traders who are involving in poultry is increasing in recent years that had additional contribution for the rise in the price of poultry. The possible explanation for the impact of increase in the number of traders on price of poultry is that, as the number of traders increase, competition among themselves also increases which intern result in the rise of poultry prices. Rapid expansion of cafeteria, hotels and restaurants together with strong consumer preference for poultry meat contributed for the change in price. Producers during group discussion in the three monitored market places indicated that increase in the price of grain associated with increase in the number of consumers and rise in living standard had contributed for the rise in price of livestock in general and poultry in particular. To some extent, producers in all locations pointed out that reduction in the number of poultry producers related with lack of management skill, prevalence of disease and shortage of feed resulted in low supply in poultry which intern has influenced to some extent the price of animals. In the cross-sectional survey,

households' were interviewed to quantify the current and the past ten years price of poultry by type. Correspondingly, the average price of cock, cockerel, pullet and hen had increased during the period 2003–2013 in the three surveyed sites. For instance, as indicated from the figure 1 the average price for cockerel before ten years was 17.25, 24.5 and 32.48 ETB in rural, peri-urban and urban locations, respectively. On the other hand, the average current price for cockerel is 70.3, 100.6 and 140.8 Ethiopian birr, respectively in rural, peri-urban and urban areas. This result indicates the increases in the price of poultry by more than four fold in the three settings especially the rise in price is relatively higher in the urban and peri-urban in general, the rise in price associated with different factors would be a good opportunity and motive for those small holders who are engaged in poultry production as they would benefit from the sale of their poultry.

**Attributes for Setting Prices of Poultry:** Attributes for setting prices of poultry is presented in Table 2. The information obtained showed that marketing poultry on weight base (using kilogram) was totally unknown in the three market places. Hence, farmer's market using certain attributes of poultry. The majority of respondents reported the use of body size (large, medium and small), color, age and physical appearance respectively. Producers during group discussion in the three market places have identified similar attributes of poultry in quoting price. Consumers and traders mostly focus on body size, color and age of poultry. During market monitoring survey, it was possible to observe that, buyers assess the body size of poultry by holding and observing their physical appearance. According to Solomon *et al.* [12] animals in good body condition receive higher price than the skinny ones.

According to the respondents of this study, younger birds fetch better price than older birds; as a result most consumers do not purchase older birds or purchase them at a lower price. This is due to the fact that the meat of younger bird is tender than older animals. Price per animal

Table 1: Level of change in the price of poultry in the past 10 years in rural, urban and peri-urban

Level of change	Area N (%)			Price in ETB		
	Rural n=30	Urban n=30	Peri-urban n=30	Area	Previous price before 10 years	Current Price after 10 years
Two fold	3(15)	2(10)	1(5)	Rural	17.25	70.3
Three fold	4(20)	5 (25)	6(30)	Urban	24.5	100.6
Four fold	13(65)	14(70)	13(65)	Peri-urban	32.48	140.8

N= Number of respondents

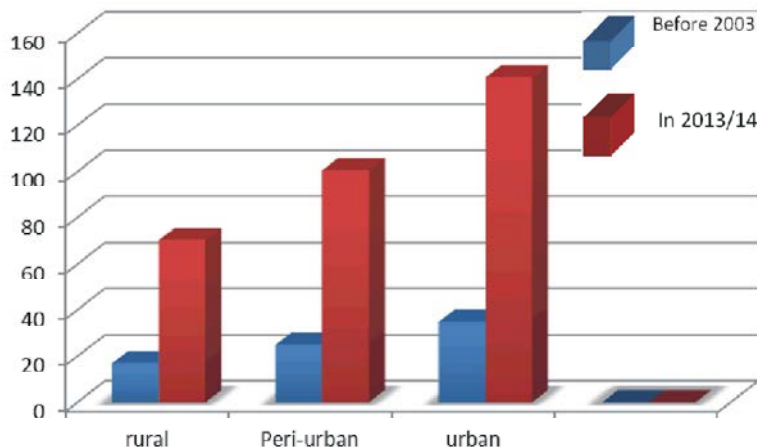


Fig. 1: Average price of cockerel currently and before ten years in urban, peri-urban and rural

Table 2: Attributes for setting prices of poultry in rural, peri-urban and urban areas

Attributes	Areas N (%)		
	Rural n=30	Urban n=30	Peri-urban n=30
Body size	23 (76.6)	25 (83.3)	24 (80)
Color	11(36.6)	10 (33.3)	9 (30)
Age	17(56.6)	19 (63.3)	18 (60)
Appearance	9 (30)	5 (16.6)	5 (16.6)

• Percentages exceed 100% as respondents mentioned two or more attributes of poultry

Table 3: Households’ sources of market information in urban, peri-urban and rural

Source of information	Areas N (%)		
	Urban n=30	rural n=30	peri-urban n=30
Neighbor	28(93.3)	27(90)	26(86.6)
Friend	3(10)	3(10)	4(13.3)
Development agents	0	1(3.3)	1(3.3)

\*Percentages exceed 100% as respondents mentioned two or more sources of market information

increased with age but declined for older or over matured animals [4]. Although, this result indicates the priority given by producers for the attributes of poultry in setting their price, it is clear that producers, traders as well as consumer do not depend solely on one attributes of poultry.

**Sources of Market Information:** Households’ source of market information in the three surveyed locations is given in Table 3. Most of the interviewed flock owners pointed neighbor and friends as the potential sources of market information respectively. Neighbors or friends who

have visited poultry market situations or who have sold /purchased in the nearest market days provide information about the overall situation of poultry (livestock) market for their neighbors/friends. Ayen Mulu [13] has also reported neighbor as the main source of market information in Amhara regional state. (Personal observation). Interestingly, in addition to the above mentioned sources of market information, some respondents indicated the presence of personal market assessment one or two weeks prior to selling their animals, only if they are not forced to sell their animals due to critical income need to fulfill households’ income gap. Personal visits to markets, though not usually deliberately undertaken, are said to be the most dependable source of information and in general, the methods used to obtain market information are characteristically traditional [13].

**Use of Brokers in Poultry Marketing:** Respondents were asked whether they use brokers when they market poultry accordingly, all respondents of peri-urban, rural and urban reported that they do not use brokers when marketing animals. All respondents of the three settings explained marketing of poultry through direct negotiation between the buyer and sellers. This indicates that farmers are becoming aware of the Importance of marketing poultry through direct negotiation and lack of trust on brokers.

**Poultry Supply and Demand:** Table 4 aggregates the number of poultry offered and sold in different market events during Normal/non-festivity or Christmas fasting period and on set of Orthodox Christians Christmas festivity in rural, urban and peri-urban locations.

Table 4: Table number of poultry offered and sold in different market events during Normal/non-festivity or Christmas fasting period and on set of Orthodox Christians Christmas festivity

	Areas /market event					
	urban		Peri-urban		rural	
	supplied	sold	supplied	sold	supplied	sold
Time of marketing						
During normal time /Christmas fasting in 2008/2009	M=203 F=123	M=105 F=20	M=115 F=83	M=60 F=23	M=49 F=50	M=29 F=20
During the onset of religious /Christmas festivities in 2008 /2009	M=529 F=50	M=486 F=25	M=250 F=63	M=235 F=25	M=150 F=42	M=125 F=21

Where M=male birds, F=female birds

Table 5: Average selling price (ETB) of cockerel during normal and fasting market events in the areas

Flock type	Area (Mean±SD)				Average price	p-value
	Rural n=30	Urban n=30	Peri-urban n=30			
Price of cockerel during Normal Fasting market events	25(70.3±49.1 <sup>b</sup> )	27(140.8±39.9 <sup>b</sup> )	26(100.6±54.2 <sup>a</sup> )		140.5 ETB	0.045

\*Levels not connected by same letter are significantly different within row (p<0.05)

\*SD= standard deviation,\*N=Number of observations.

As compared to other market events, peak supply of poultry was recorded during Christmas, while the lowest quantity offered was observed during Christmas fasting period of Orthodox Christians in the three monitored market places of the three locations.

The lowest supply during fasting period may be due to dropping in demand for poultry as a result of Christmas fasting period of Orthodox Christian. Both the quantity purchased and offered for sale considerably increases during religious festivals and the lowest demand for poultry is expected to occur during fasting periods [3]. In urban and peri-urban the supply of poultry was higher than those in rural market events. On the other hand, during normal, Christmas fasting period of Orthodox Christians market occasions the supply of poultry was decreased in all market events. This could be due to the lower demand for poultry during these times. This is also confirmed by producers during group discussion in the market that cocks and cockerels are supplied in large quantity and highly demanded during major religious holiday /festivals (particularly charismas, Easter and Ethiopian Knew Year) than any other market events. With regard to the number of poultry sold, large number of sale for Poultry was recorded during charismas, whereas lower sale of poultry were during Christmas fasting period of Orthodox Christians in the three locations. As indicated from table 4 among the poultry sold, the highest proportion was male.

**Selling Price for Poultry:** The result obtained from the study areas indicated that the interaction effect of location and market events had significant (p<0.05) effect on the selling price of poultry. Table 5 indicates the average prices of poultry traded in different market events. From the result it is apparent that market events had the highest average selling price for poultry was obtained during charismas and the lowest during Christmas Fasting period of Orthodox Christians. This is in line with previous reports in that during major cultural and religious holidays prices of animals' increases [14] Prices increase in the onset of religious festivities and decrease in fasting periods [13]. This report further noted that it is difficult to change this demand pattern as it is a matter of religion. The only option is to cope with the existing situation. According to Thomsen [15] the fact that predictability of the price fluctuations is high, since they are based on socio-cultural events is an advantage.

Table 6 presents the average selling price of poultry in rural urban and peri-urban areas. Area had significant (p<0.05) effect on the selling price of poultry. The highest average selling price for poultry was observed in urban areas while the lowest selling price for poultry was in the rural study area. This result implies that access to large urban consumers market has the influence on the Price of poultry than markets distantly located and away from large urban consumers market; in this regard farmer in Assosa town. Poultry producers in the rural fetch

Table 6: Average selling price (ETB) of cockerel during religious festivals in the areas

Flock category	Area (Mean±SD)			Average price	p-value
	Rural n=30	Urban n=30	Peri-urban n=30		
Price of cockerel during religious festivals	29(160.2±0.86) <sup>a</sup>	27(85.3±0.86) <sup>b</sup>	28(120.6±0.86) <sup>c</sup>	160.2 ETB	<0.001

\* Levels not connected by same letter are significantly different within raw (p<0.05)

\*SD= standard deviation,\*N=Number of observations

Table 6: Average selling price (ETB) of cockerel during religious festivals in the areas

Flock category	Area N (Mean±SE)			p-value
	Urban n=30	rural n=30	peri-urban n=30	
Price of cockerel during religious festivals	29(160.2±0.86) <sup>a</sup>	27(85.3±0.86) <sup>b</sup>	28(120.6±0.86) <sup>c</sup>	<0.001

\*Levels not connected by same letter are significantly different within raw (p<0.05),

\*SD= standard deviation,\*N=Number of observations

relatively lower price from the sale of their animals as compared to farmers in the urban and peri-urban. This may be due to relatively remoteness to the large urban towns and the presence of poor market infrastructure including road. Organizing farmers in cooperatives, developing good road network and making available of market information could benefit the farmers from the sale of their animals including poultry.

**Reasons for Selling Poultry:** Households' selling reasons for poultry in urban, rural and peri-urban locations are given in Table 7. Overall, the reasons for selling poultry, include the need to cover cash expenses to fill household food shortage, credit repayment, changing for other animal, clothing and covering school fee in that order. Aklilu [11] Has reported similar selling reasons of livestock including poultry in different parts of the country. Producers' selling reasons for poultry varied slightly across the three areas for instance, disease problem, purchasing food items covering school fee and scarcity of labor respectively were the main producer's reason for selling poultry in rural, areas (Table 7). As a result farmers sell poultry for purchasing of food items. In rural crops require extended period of time to be harvested hence, farmers may be forced to sell poultry to balance household food shortage. In urban areas the main reason for selling poultry were disease problem, purchasing food items and profit respectively. Households in peri-urban sell their birds due to disease problem, purchasing food items and to get profit.

**Poultry Market Routes, Market Infrastructure and Participants:** Producers, during household survey and group discussion in market indicated the presence of

Table 7: Households' reasons for selling poultry in rural peri-urban and urban locations

Selling reasons	Areas N (%)		
	Rural n=30	urban n=30	peri-urbann=30
Credit repayment	7(23.3)	8(26.6)	5 (16.6)
Disease problem	16(53.3)	14(46.6)	15(50)
Profit	5(16.6)	12(40)	9(30)
Scarcity of labor	12(40)	0(0)	3(10)
Clothing	9(30)	7(23.3)	8(26.6)
Covering school fee	14(46.6)	5(16.6)	10(33.3)
Purchasing food items	15(50)	14(46.6)	12(40)
Changing for other animal	5(16.6)	0(0)	6(20)

\*N=Number of farmer sellers, \*p<0.05

marketing of poultry at the farm gate or/from their neighbors/ relatives. There are also farmer-traders who purchase poultry from the farm get or village markets to supply in the large markets (especially during off-season to generate additional cash income). These days due to the presence of access to credit facility from the government and other credit providing Institutions, the number of farmers who are involving in trading of poultry is increasing particularly in rural and peri-urban markets. For farmers in urban the main market for trading their animals is Assosa and it takes place on a fixed days every Saturday, Wednesday and Friday. For farmers in rural and peri-urban the main market for trading their animals is Assosa. In addition to Assosa market, they use village/local markets found within their kebele such as Amba-14 and Amba-16. Poultry traders in rural purchase poultry from Amba-16 and sell entirely in Assosa market. In addition to selling in Assosa market, they also supply for hotels and restaurants found in Assosa town.

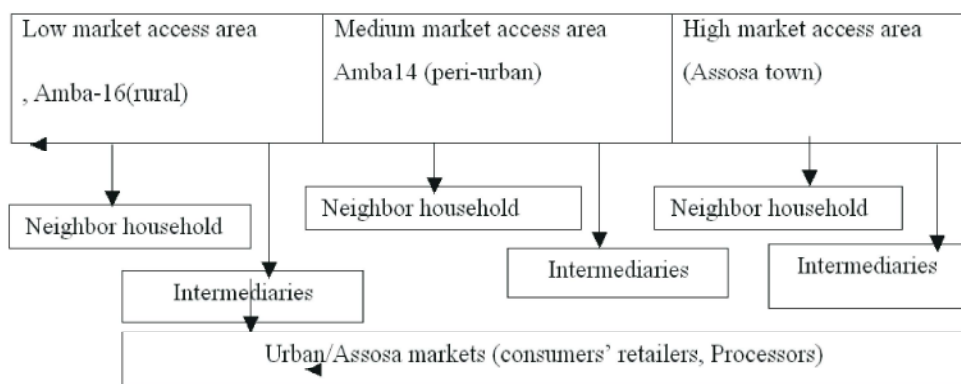


Fig. 10: Poultry marketing channels in locations representing low medium and high market access

Table 8: Poultry market problems in the three locations

Problems	Locations N (%)		
	Urban	Rural	Peri-urban
Seasonal fluctuation of price	29(96.6)	28(93.3)	27(90)
Lack of market channel	0(0)	25(83.3)	7(23.3)
Low price	5(16.6)	7(23.3)	6(20)
Distance	0(0)	15(50)	14(46.6)
Interference of brokers	3(10)	12(40)	11(36.6)
Road problem	0(0)	0(0)	0(0)

Percentages exceed 100% as respondents mentioned two or more poultry marketing Problems

The same is true for poultry traders in peri-urban. Traders from Assosa visit amba-14 market to purchase poultry and they sale in Assosa. Market day in Amba -14 and Amba-16 was on fixed days every Thursday and Sunday. Farmers are the main suppliers of poultry to rural and peri urban markets, whereas in urban majority of poultry are supplied by the farmers and few traders. Traders purchase poultry from the neighboring rural markets and supply it to the market at Assosa town. In the three markets monitored, besides participating in the selling of poultry, producers also participate in purchasing of poultry mainly for breeding, slaughtering and to a limited extent for profit. Owners of restaurant and individual consumers are also the main market participants observed in the market places of the three locations. The participation of restaurant owners and individual consumers drastically decrease during Orthodox Christian fasting period in the three market places.

**Poultry Marketing Problems:** During cross-sectional survey, households’ in the three locations pointed out Problems that have an effect on poultry marketing and the result obtained revealed seasonal fluctuation in the price

of poultry as the main problem in poultry marketing followed by lack of market channel (Table 8).

As expressed by the respondents and producers during group discussion in the market, the price of poultry is attractive mostly during major religious holiday so that the price at this time is high.

In addition in rural areas mostly marriage and other social activities take place right after crop harvest, hence at this time the price and demand for poultry increased. On the contrary, the price of poultry is drastically low during fasting periods, when farmers are forced to sell during disease season/year, in time of crop failure and before crop harvest due to oversupply. Seasonality in marketing is a common phenomenon with most agricultural products including livestock in general and poultry in particular [13]. This report further indicated that the problem of price instability, i.e., too high livestock prices are tied to targeting sales to only a few days in entire year especially during religious festivals and low prices when there is under-demand in the rest of the year especially during fasting days. All respondents from the three study areas were accessible to road as result lack of market channel/out let was not a constraint for poultry marketing process in the area (Table 8). Interference of brokers was not the issue of poultry marketing problem in all study areas. During market monitoring in the three locations it was possible to validate that brokers are very limited in number and have limited impact in poultry transaction. Farmers in the three market sites of the three locations found to reach in agreement mostly through direct and after long negotiation with traders, consumers and producers. Besides the constraints summarized in Table 8, producers during group discussion pointed out the presence of disease transmission in the market and lack of livestock price information in general and poultry in particular.

## CONCLUSION

The study was undertaken in rural, urban and peri-urban locations of Assosa district in Benishangul Gumuz Region, Western Ethiopia. The aim of the study was to investigate the status of poultry marketing in the three locations of the study area. Peak supply and sale of poultry was noted during Christmas, while the lowest volume of supply and sale for poultry was observed during fasting period compared to other market events in the three visited locations. The highest price of poultry was recorded during Christmas and the lowest during Christmas fasting period of Orthodox Christians. Higher selling price for poultry was obtained in urban and the lowest price was found in rural. The major reasons for selling poultry include the need to cover cash expenses to fill household food shortage, credit repayment, changing for other animals and buying cloth respectively. Improving the infrastructure and organizing farmers in cooperative could benefit the farmers from the sale of their livestock in general and poultry in particular in rural which were relatively distantly located from large urban consumers. Overall, the study showed the presence of high demand for poultry marketing but the marketing condition is challenged by different constraining factors in urban, peri-urban and rural locations. This implies that any area based development interventions aiming to improve poultry marketing condition and thereby enhance the livelihood of small holder farmers should be planned and implemented in relation to the felt need of the actors.

**Competing Interest:** The authors declare that no competing interest

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## REFERENCES

1. Delgado, C.M., H. Rosegrant, S. Seinfeld, Ehui and C. Courbois, 1999. Livestock to 2020 the next revolution. Food, Agriculture and the Environment Discussion paper 28. FAO, Italy.
2. Sonaiya, E. and E. Branckaert Guèye, 1999. Research and development option for family poultry. First INFPD/FAO Electronic Conference on Family Poultry. Accessed December 2003, faoext02.fao.org/waicent/faoinfo/agricult/aga/agap/lps/fampo/intropap.htm.
3. Tadelle, D., 1996. Studies on village poultry production systems in the central highlands of Ethiopia. M.Sc. Thesis, Swedish University of Agricultural Sciences. Uppsala, Sweden.
4. Tadelle, D.T., Y. Million Alemu and K.J. Peters, 2003b. Village chicken production system in Ethiopia. Paper 2. Use patterns and performance valuation and chicken products and socio economic functions of chicken Livestock Research for Rural Development. 15(1): 4 <http://www.cipav.org.co/irrd/irrd15/1/tadeb151.htm>.
5. Tadelle, D., T. Million, Y. Alemu and K.J. Peters, 2003a. Village chicken production system in Ethiopia: Paper 1. Flock characteristics and performances, Livestock Research for Rural Development, 15(1): 4-8. <http://www.cipav.org.co/irrd/irrd15/1/tadaa151.htm>.
6. AsARC (Assosa Agricultural Research Center), 2006. Research Strategy Document. Ethiopian Institute of Agricultural Research. Assosa Agricultural Research Center. Assosa. (Unpublished).
7. Assosa, B.o.A.R.D., 2008. Report, Assosa wereda agricultural activities. (Unpublished).
8. CSA (Central Statistical Authority), 2008. Sample enumeration Results determinants in Ethiopia. Research Report 9. ILRI (International Livestock Research Institute), Nairobi, Kenya, pp: 52.
9. Assosa Meteorological Station, 2008. annual meteorological report.
10. SPSS, 2002. Statistical Package for Social Science, SPSS 11.5 for Windows. SPSS Inc. Chicago, Illinois systems of rearing. Proceedings of first Annual Livestock Research Workshop, Livestock Research Institute, Savar, Bangladesh.
11. Aklilu, H., 2007. Village poultry keeping in Tigray, Ethiopia. How rural poor households value and access poultry.
12. Solomon, A., A. Workalemahu, M. Jabbar, M. Ahmed and B. Hurnissa, 2003. Livestock marketing in Ethiopia. A review of structure, performance and development initiatives. Socio-economic and policy research working paper 52. International livestock Research institute, Nairobi, Kenya.



13. Ayen Mulu, 2004. Final report on: Agricultural commodity marketing system study project, sheep and goat marketing system. Amhara national regional state head of government office, Bahir Dar, Ethiopia. Unpublished.
14. TsedekeKotcho, 2007. Production and marketing systems of sheep and goats in Alaba, southern Ethiopia. Msc Thesis, University of Hawasa, Awasa, Ethiopia.
15. Thomsen, K., 2005. Poultry as Development. Ethnography of Smallholders and Technical Development Assistance in Benin. MSc thesis, Institute of Anthropology, University of Copenhagen, Copenhagen, Denmark.